

Local Hazard Mitigation Plan ANNEX

City of Petaluma

Introduction

The City of Petaluma is a moderately-sized city in Sonoma County, California. The City has a population of 56,727 people, based on the 2006 census¹. Last year, the City's budget was \$168,442,000. The City employs approximately 333 people and provides both police and fire protection services.

The Planning Process

The process of preparing this plan was familiar to the City of Petaluma, which has a Safety Element to its General Plan (last updated in 1987 and currently in the process of being updated) that includes a discussion of fire, earthquake, flooding, and landslide hazards. In addition, the City routinely enforces the California Environmental Quality Act (CEQA), which, since 1988, has required mitigation for identified natural hazards. The City's effort has focused on building on these pre-existing programs, identifying gaps that may lead to disaster vulnerabilities, and addressing these risks through mitigation.

Many of the activities conducted by the City were fed into the planning process for the multi-jurisdictional plan. It participated in various ABAG workshops and meetings, including the general "kick-off" meeting. The City was particularly instrumental in the development of this plan due to the participation of City Council members on both ABAG's Regional Planning Committee, as well as its Executive Board. In addition, the City has provided oral comments on the multi-jurisdictional plan. Finally, the City provided information on facilities that are viewed as "critical" to ABAG.

Key City staff met to identify and prioritize mitigation strategies appropriate for Petaluma. Staff involved in this meeting included representatives from Risk Management, Parks and Recreation, Water Resources, Community Development, Public Works, and the Fire Department. At the meeting, the general priorities and appropriate City departments were identified, as well as preliminary budgets and potential funding sources for strategies designed as "high" priority. The City provided opportunity for the public to comment on the DRAFT mitigation strategies selected by staff at the City Council meeting on April 2, 2007. The resolution adopting the plan and strategies was on the City Council agenda at that time. These mitigation strategies will become an implementation appendix to the Safety Element.

Hazard and Risk Assessment

The ABAG multi-jurisdictional Local Hazard Mitigation Plan, to which this is an Annex, lists nine hazards that impact the Bay Area, five related to earthquakes (faulting, shaking, earthquake-induced landslides, liquefaction, and tsunamis) and four related to weather (flooding, landslides,

¹ For complete Census information on this city, see <http://www.bayareacensus.ca.gov/>.

wildfires, and drought). These hazards also impact this community, except for surface faulting. Surface faulting is not a hazard to Petaluma because no active faults are located in the City.

While the City has undertaken a number of general hazard mapping activities since the first Safety Element was prepared, the maps are less detailed and are not as current as those shown on the ABAG website at <http://quake.abag.ca.gov/mitigation/>.

Information on disasters declared in Sonoma County is at <http://quake.abag.ca.gov/mitigation/disaster-history.html>.

The City examined the hazard exposure of City urban land, based on the information on ABAG's website at <http://quake.abag.ca.gov/mitigation/pickdbh2.html>. Of the 8,226 urban acres in the City:

- ◆ Earthquake faulting – No active faults run within the City, so rupture of a fault is not a direct concern.
- ◆ Earthquake shaking – 1,028 acres are in the highest two categories of shaking potential.
- ◆ Earthquake-induced landslides – The California Geological Survey has not completed mapping of this hazard in the City of Petaluma. However, because few areas have been mapped as landslides, this hazard is viewed as similar to that posed by weather-related hazards.
- ◆ Earthquake liquefaction – 6,572 acres are in areas of moderate, high, or very high liquefaction susceptibility.
- ◆ Tsunamis – While tsunamis may be a hazard to Petaluma, mapping of the inundation area has not been completed at this time. However, if one assumes that there is a 42 foot tsunami at the entrance to the Bay (as stated in the multi-jurisdictional LHMP), the wave height on the opposite bank in the Oakland-Berkeley area will be roughly half (21feet) and roughly 10% or 4 feet at each end (Alviso in San Jose and the north side of San Pablo Bay). In this situation, the wave height in Petaluma will be somewhere less than four feet - insignificant hazard that would only impact wetland areas. The California OES has funded the mapping of tsunami inundation evacuation planning maps for within San Francisco Bay; however, this mapping is not yet complete. This LHMP will be modified to examine the hazard of tsunamis when the maps are available.
- ◆ Flooding –125 acres are in the 100-year flood plain, while an additional 284 acres are in the 500 year flood plain.
- ◆ Landslides – 1,402 acres are in areas of existing landslides, 702 acres in areas of few landslides, 700 acres are in areas of existing landslides, including three schools located in predominantly landslide area. Two critical facilities are located predominantly within a landslide area.
- ◆ Wildfires – No urban acres are in the extreme critical fire area (because of the urban nature of the city); however, 1,416 acres are in the fire threat area for wildland urban interface.
- ◆ Dam inundation – No acres are subject to dam inundation.
- ◆ Drought – all 8,226 acres are subject to drought.

The City also examined the hazard exposure of infrastructure based on the information on ABAG's website at <http://quake.abag.ca.gov/mitigation/pickdbh2.html>. Of the 211 miles of roadway in the City:

- ◆ Earthquake faulting – No active faults run within the City, so rupture of a fault is not a direct concern.
- ◆ Earthquake shaking – 192 miles of roadway are in the moderate category of shaking potential, 13 miles in the next highest category for earthshaking potential, and zero roads in the highest category of shaking potential.
- ◆ Earthquake-induced landslides – The California Geological Survey has not completed mapping of this hazard in Petaluma. However, this is unlikely to be an issue because no roads are in existing landslide areas
- ◆ Earthquake liquefaction – 170 miles of roadway are in areas of moderate, high, or very high liquefaction susceptibility. 157 miles of pipeline are in areas of moderate, high or very high liquefaction susceptibility.
- ◆ Tsunamis – While tsunamis may be a hazard in the City of Petaluma, mapping of the inundation area has not been completed at this time.
- ◆ Flooding – Nine miles of roadway are in the 100-year flood plain, while an additional one mile is in other flood-prone areas.
- ◆ Landslides – No roads are in areas of existing landslides.
- ◆ Wildfires – One mile of roadway is subject to high, very high, or extreme wildfire threat, and 108 miles of roads are in wildland-urban interface threat areas.
- ◆ Dam inundation – No miles of roadway are in an area subject to dam inundation.
- ◆ Drought – is not a hazard for roadways.

Finally, the City examined the hazard exposure of critical health care facilities, schools, and city-owned buildings, based on the information on ABAG's website at

<http://quake.abag.ca.gov/mitigation/pickcrit.html>. Of the critical facilities in the City:

- ◆ Earthquake faulting – No active faults run within the City, so rupture of a fault is not a direct concern.
- ◆ Earthquake shaking – All 24 elementary schools and all 11 health care facilities are located in moderately high areas with earthquake shaking potential. While 40 of the critical facilities owned by Petaluma have moderately high earthquake shaking potential, six are in very high areas.
- ◆ Earthquake-induced landslides – The California Geological Survey has not completed mapping of this hazard in the City of Petaluma. However, this is unlikely to be an issue because no roads are in existing landslide areas
- ◆ Earthquake liquefaction – Of the 11 health care facilities located in Petaluma, seven are in moderate, high, or very high areas of susceptibility to earthquake liquefaction. Of the 24 schools, 18 are in moderate, high, or very high areas of susceptibility to earthquake liquefaction. Of the 46 City-owned critical facilities, 14 are in a moderately high area, 12 are in a high area and 10 are in a very high area for potential earthquake liquefaction.
- ◆ Tsunamis – While tsunamis may be a hazard to the City, the mapping of the inundation area has not been completed at this time

- ◆ Flooding – No critical health care facilities, schools, or city-owned facilities are in either the 100-year flood plain or in other flood-prone areas.
- ◆ Landslides – No critical health care facilities, schools, or city-owned facilities are in areas of existing landslides.
- ◆ Wildfires – Seven health care facilities, 10 schools, and 24 city-owned critical facilities are in the wildland-urban interface threat areas.
- ◆ Dam inundation – No critical health care facilities, schools, or city-owned facilities are in an area subject to dam inundation.
- ◆ Drought – Drought will not affect City buildings directly. However, the City does operate a water-supply distribution system.

There have been 38 properties that have suffered repetitive flood losses, three located in the 500-year flood plain and 35 outside the flood plain. Information can be found at <http://quake.abag.ca.gov/mitigation/pickflood.html>.

The City plans to work with ABAG during 2007 to improve the risk assessment information being compiled by ABAG by providing information on unreinforced masonry buildings and soft-story apartments located in the City.

Drought, though a potential problem in the City, is not fully assessed. The City will work with ABAG and various water supply agencies on this issue.

The City plans to work with ABAG to develop specific information about the kind and level of damage to buildings, infrastructure, and critical facilities which might result from any of the hazards previously noted.

As these impacts are not fully developed, the City has reviewed the hazards identified and ranked the hazards based on past disasters and expected future impacts. The conclusion is that earthquake (particularly shaking), flooding, wildland-urban interface fires, and landslides (including unstable earth) pose a significant risk for potential loss.

Mitigation Activities and Priorities

As a participant in the ABAG multi-jurisdictional planning process, City of Petaluma staff helped in the development and review of the comprehensive list of mitigation strategies in the overall multi-jurisdictional plan. The list was discussed at a January 31, 2007 meeting of the various City departments, including Risk Management, Parks and Recreation, Water Resources, Community Development, Public Works, and the Fire Department. At the meeting, all of the mitigation strategies were reviewed. The tentative decision on priority was made, based on a variety of criteria, not simply on an economic cost-benefit analysis. These criteria include being technically and administratively feasible, politically acceptable, socially appropriate, legal, economically sound, and not harmful to the environment or our heritage.

Over time, we are committed to developing better hazard and risk information to use in making those trade-offs. We are not trying to create a disaster-proof region, but a disaster-resistant one. In addition, several of the strategies are existing City programs.

These draft priorities will be submitted to the City Manager for review. They were provided to the City Council on April 2, 2007. The public was provided with an opportunity to comment on the DRAFT priorities. The final strategies (as shown in the attached table) will become an *Implementation Appendix* to the City's Safety Element.

The City has identified 109 high priority mitigation strategies for which the City will be seeking funding from a variety of sources. The City plans to become very proactive in the hazard mitigation during the coming years.

The Plan Maintenance and Update Process

The City Public Works Department will ensure that *monitoring* of this Annex will occur on an ongoing basis. However, the major disasters affecting our community, legal changes, notices from ABAG as the lead agency in this process, and other triggers will be used. Finally, the Annex will be analyzed yearly by City departments, and updated as needed. At that time, staff will focus on *evaluating* the Annex in light of technological and political changes during the previous year or other significant events. This group will be responsible for determining if the plan should be updated.

The City of Petaluma is committed to reviewing and *updating* this plan annex at least once every five years, as required by the Disaster Mitigation Act of 2000. To that end, the Public Works Project Manager will contact ABAG four years after this plan is approved to ensure that ABAG intends to undertake the plan update process. If so, the City again will participate in the multi-jurisdictional plan. In the event ABAG is unwilling or unable to act as the lead agency in the multi-jurisdictional effort, other agencies will be contacted, including the County's Office of Emergency Services. ABAG counties should then work together to identify another regional forum for developing a multi-jurisdictional plan.

The *public* will continue to be involved whenever the plan is updated, as appropriate, during the monitoring and evaluation process. Prior to adoption of updates, the City will provide the public with an opportunity to comment on the updates. A public notice will be posted prior to the meeting to announce the comment period and meeting logistics.